AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) An automatic white balance adjusting method, comprising:

~~a step of~~ calculating the white balance correction values based on the RGB signals obtained from a color image pickup element; and

~~a step of~~ adjusting the white balance of said RGB signals based on said calculated white balance correction values;

wherein said ~~step of~~ calculating the white balance correction values comprises:

~~a step of~~ acquiring the color information for each of a plurality of division areas in which one screen is divided into a plurality of areas, based on said RGB signals within each division area;

~~a step of~~ grouping the color information for said plurality of division areas for every color information similar to each other;

~~a step of~~ counting the number of color information within each of the groups into which the color information is grouped and obtaining a specific group of color information from among the grouped color information for use in calculating the white balance correction values based on said counted number; and

~~a step of~~ calculating said white balance correction values based on the color information contained in said specific group.

2. (Currently Amended) The automatic white balance adjusting method according to claim 1, wherein said ~~step of~~ acquiring the color information of said division area comprises ~~a step of~~ integrating the RGB signals within said division area for each color to obtain an integrated value for each color, and ~~a step of~~ acquiring the ratios R/G and B/G of said integrated

value for each color and having the ratios R/G and B/G as the color information of said division area.

3. (Currently Amended) The automatic white balance adjusting method according to claim 2, wherein said ~~step of~~ grouping comprises ~~a step of~~ acquiring the distance in the color information between said adjacent division areas on a color space represented by R/G and B/G, and ~~a step of~~ grouping the color information for said adjacent division areas as the same group when said acquired distance is less than or equal to a predetermined value.

4. (Currently Amended) The automatic white balance adjusting method according to claim 1, wherein said ~~step of~~ obtaining the specific group comprises obtaining the group from among the grouped color information, as said specific group, in which the number of color information within each of the groups into which the color information is grouped is greater than or equal to a predetermined number.

5. (Currently Amended) The automatic white balance adjusting method according to claim 4, wherein said ~~step of~~ calculating the white balance correction values comprises calculating the white balance correction values to make the representative color information representing the color information within each group the target color information, and calculating said white balance correction values by adding the calculated white balance correction values for each group that is weighted by the number of color information with each group, when there are a plurality of said specific groups.

6. (Currently Amended) The automatic white balance adjusting method according to claim 1, wherein said ~~step of~~ obtaining the specific group from among the grouped color information comprises obtaining, as said specific group, a group having the largest number of color information within each of the groups into which the color information is grouped.

7. (Currently Amended) The automatic white balance adjusting method according to claim 6, wherein said ~~step of~~ calculating the white balance correction value comprises calculating the white balance correction values to make the representative color information within said group having the largest number of color information the target color information.

8. (New) The automatic white balance adjusting method according to claim 3, wherein said distance is calculated according to the following formula:

$$D = \sqrt{\left\{(R_1 / G_1 - R_2 / G_2)^2 + (B_1 / G_1 - B_2 / G_2)^2\right\}}$$

wherein R_1/G_1 and B_1/G_1 represent a first piece of color information representing a first point in the color space;

wherein R_2/G_2 and B_2/G_2 represent a second piece of color information representing a second point in the color space; and

wherein D is the distance in the color information between said adjacent division areas in a color space represented by R/G and B/G.

9. (New) The automatic white balance adjusting method according to claim 3, wherein said distance is calculated according to the following formula:

$$D^2 = (R_1 / G_1 - R_2 / G_2)^2 + (B_1 / G_1 - B_2 / G_2)^2$$

wherein R_1/G_1 and B_1/G_1 represent a first piece of color information representing a first point in the color space;

wherein R_2/G_2 and B_2/G_2 represent a second piece of color information representing a second point in the color space; and

wherein D is the distance in the color information between said adjacent division areas in a color space represented by R/G and B/G.

10. (New) The automatic white balance adjusting method according to claim 5, wherein said white balance correction values are calculated according to the following formulas:

$$Gr = \sum Gri \times \left(Ni / \sum Ni\right)$$

$$Gb = \sum Gbi \times \left(Ni / \sum Ni\right)$$

wherein *Gr* is an R/G gain and *Gb* is an B/G gain;

wherein *N* is the number of pieces of color information within each specific group; and

wherein *i* is the range of summation representing a number of the specific groups.

11. (New) An automatic white balance adjusting apparatus for adjusting the white balance of an input RGB image, comprising:

a color acquisition device to acquire color information for each of a plurality of division areas of a screen-divided input RGB image;

a grouping device for grouping the color information for said plurality of division areas for color information similar to each other;

a counting device for counting the number of color information within each of the groups;

a calculating device wherein a specific group of color information from among the grouped color information is obtained for use in calculating the white balance correction values based on said counted number and the color information contained in said group; and

an adjusting device for adjusting the white balance of said input RGB image based on said calculated white balance correction values.

12. (New) The apparatus of claim 11, wherein the color acquisition device comprises:

an integrating device that integrates RGB signals within said division area to obtain an average integrated value for each color in each division area;

a second calculating device that calculates ratios R/G and B/G of said average integrated value in each division area; wherein said ratios R/G and B/G represent the color information of each division area.

13. (New) The apparatus of claim 11, wherein the grouping device comprises:

a third calculating device that calculates distance in the color information between said division areas on a color space represented by R/G and B/G, and groups the color information for said division areas as the same group when said acquired distance is less than or equal to a predetermined value.

14. (New) The apparatus of claim 13, wherein said distance in the color information is calculated according to the following formula:

$$D = \sqrt{\left\{\left(R_1/G_1 - R_2/G_2\right)^2 + \left(B_1/G_1 - B_2/G_2\right)^2\right\}}$$

wherein R_1/G_1 and B_1/G_1 represent a first piece of color information representing a first point in the color space;

wherein R_2/G_2 and B_2/G_2 represent a second piece of color information representing a second point in the color space; and

wherein D is the distance in the color information between said adjacent division areas in a color space represented by R/G and B/G.

15. (New) The apparatus of claim 13, wherein said distance in the color information is calculated according to the following formula:

$$D^2 = (R_1 / G_1 - R_2 / G_2)^2 + (B_1 / G_1 - B_2 / G_2)^2$$

wherein R_1/G_1 and B_1/G_1 represent a first piece of color information representing a first point in the color space;

wherein R_2/G_2 and B_2/G_2 represent a second piece of color information representing a second point in the color space; and

wherein D is the distance in the color information between said adjacent division areas in a color space represented by R/G and B/G.

16. (New) The apparatus of claim 11, wherein said specific group of color information from among grouped color information obtained in said calculating device is the group in which the number of counted color information within each of the groups is greater than or equal to a predetermined number.

17. (New) The apparatus of claim 11, wherein said specific group of color information from among grouped color information obtained in said calculating device is the group having the largest number of color information among the groups.

18. (New) The apparatus of claim 16, wherein said calculating device calculates said white balance correction values based on the color information contained in said specific group of color information from among grouped color information wherein target color information comprises the representative color information representing the color information within each group.

19. (New) The apparatus of claim 17, wherein said calculating device calculates said white balance correction values based on the color information contained in said specific group of color information from among grouped color information wherein the target color information comprises the representative color information within said group having the largest number of color information.

20. (New) The apparatus of claim 11, wherein said calculating device calculates said white balance correction values by adding the calculated white balance correction values for each group that is weighted by the number of color information within each group, when there are a plurality of said specific groups.

21. (New) The apparatus of claim 20, wherein said white balance correction values are calculated according to the following formulas:

$$Gr = \sum Gri \times \left(Ni / \sum Ni\right)$$

$$Gb = \sum Gbi \times \left(Ni / \sum Ni\right)$$

wherein *Gr* is an R/G gain and *Gb* is an B/G gain;

wherein *N* is the number of pieces of color information within each specific group; and

wherein *i* is the range of summation representing a number of the specific groups.

22. (New) The automatic white balance adjusting method according to claim 1, further comprising:

calculating white balance fine adjustment values; and

multiplying the RGB signals by the white balance fine adjustment values;

wherein upon said acquiring the color information for each of the plurality of division areas, acquiring the color information for each of the plurality of division areas is based on the RGB signals multiplied by the white balance fine adjustment values.

23. (New) The automatic white balance adjusting method according to claim 1, further comprising:

calculating white balance fine adjustment values;

multiplying the RGB signals by the white balance fine adjustment values;

discriminating whether the white balance adjusting mode is the manual white balance adjusting mode or the automatic white balance adjusting mode; and

discriminating the white balance adjusting mode as the manual white balance adjusting mode, then multiplying the RGB signals by the white balance fine adjustment values and multiplying the RGB signals by the white balance correction values according to the light source species selected by the user.

24. (New) The automatic white balance adjusting method according to claim 22, further comprising:

obtaining RGB signals by photographing a gray chart under an adjusted light source corresponding to a predetermined light source species;

making white balance adjustment by multiplying the RGB signals obtained by photographing the gray chart by preset white balance correction values corresponding to the predetermined light source species;

calculating average integrated values for the RGB signals obtained by photographing the gray chart over one full screen after the white balance adjustment; and

calculating the white balance fine adjustment values, wherein the white balance fine adjustment values are ratios of the calculated average integrated values to target average integrated values corresponding to a predetermined light source species.

25. (New) The automatic white balance adjusting method according to claim 23, further comprising:

obtaining RGB signals by photographing a gray chart under an adjusted light source corresponding to a predetermined light source species;

making white balance adjustment by multiplying the RGB signals obtained by photographing the gray chart by preset white balance correction values corresponding to the predetermined light source species;

calculating average integrated values for the RGB signals obtained by photographing the gray chart over one full screen after the white balance adjustment; and

calculating the white balance fine adjustment values, wherein the white balance fine adjustment values are ratios of the calculated average integrated values to target average

integrated values corresponding to a predetermined light source species.

26. (New) The automatic white balance adjusting method according to claim 1, further comprising:

discriminating light source species at the actual photographing based on the RGB signals; and

making white balance adjustment according to the discriminated light source species.

27. (New) The automatic white balance adjusting method according to claim 26, wherein said discriminating light source species at the actual photographing, discriminating the light source species by obtaining the light source species having the color information to which the color information representing the group having the maximum number of the color information is closest among the color information of light source species.

28. (New) The apparatus of claim 11, further comprising:

calculating white balance fine adjustment values; and

multiplying the RGB signals by the white balance fine adjustment values;

wherein upon said acquiring the color information for each of the plurality of division areas, acquiring the color information for each of the plurality of division areas is based on the RGB signals multiplied by the white balance fine adjustment values.

29. (New) The apparatus of claim 11, further comprising:

calculating white balance fine adjustment values;

multiplying the RGB signals by the white balance fine adjustment values;

discriminating whether the white balance adjusting mode is the manual white balance adjusting mode or the automatic white balance adjusting mode; and

discriminating the white balance adjusting mode as the manual white balance adjusting mode, then multiplying the RGB signals by the white balance fine adjustment values and multiplying the RGB signals by the white balance correction values according to the light source species selected by the user.

30. (New) The apparatus of claim 28, further comprising:

obtaining RGB signals by photographing a gray chart under an adjusted light source corresponding to a predetermined light source species;

making white balance adjustment by multiplying the RGB signals obtained by photographing the gray chart by preset white balance correction values corresponding to the predetermined light source species;

calculating average integrated values for the RGB signals obtained by photographing the gray chart over one full screen after the white balance adjustment; and

calculating the white balance fine adjustment values, wherein the white balance fine adjustment values are ratios of the calculated average integrated values to target average integrated values corresponding to a predetermined light source species.

31. (New) The apparatus of claim 29, further comprising:

obtaining RGB signals by photographing a gray chart under an adjusted light source corresponding to a predetermined light source species;

making white balance adjustment by multiplying the RGB signals obtained by photographing the gray chart by preset white balance correction values corresponding to the predetermined light source species;

calculating average integrated values for the RGB signals obtained by photographing the gray chart over one full screen after the white balance adjustment; and

calculating the white balance fine adjustment values, wherein the white balance fine adjustment values are ratios of the calculated average integrated values to target average integrated values corresponding to a predetermined light source species.

32. (New) The apparatus of claim 11, further comprising:

discriminating light source species at the actual photographing based on the RGB signals; and

making white balance adjustment according to the discriminated light source species.

33. (New) The apparatus of claim 32, wherein said discriminating light source species at the actual photographing, discriminating the light source species by obtaining the light source species having the color information to which the color information representing the group having the maximum number of the color information is closest among the color information of light source species.